Patent Claims:

1. An arrangement for detecting a shaft break on a rotor of a first turbine (10), particularly a medium pressure turbine of a gas turbine, particularly of an aircraft engine, whereby a second turbine (11), particularly a low pressure turbine, is positioned downstream of the first turbine (10), with an operator element (16) positioned between the rotor of the first turbine (10) and a stator of the second turbine (11) radially inwardly relative to a flow channel, and with a sensor element (21) guided in the stator of the second turbine (11), in order to convert a shaft break, detected by the radially inwardly positioned operator element (16), into an electrical signal and to transmit this electrical signal to a switching element which is positioned radially outwardly relative to the flow channel on a housing of the gas turbine.

2. The arrangement of claim 1, characterized in that the operator element (16) is positioned between a last rotor blade ring of the first turbine (10), as seen in the flow direction, and a first guide vane ring of the second turbine (11), as seen in the flow direction.

3. The arrangement of claim 2, characterized in that the operator element (16) is positioned radially inwardly and neighboring to a rotor disk (12) of the last rotor blade

ring, as seen in the flow direction, of the first turbine (10).

4. The arrangement of one or more of the claims 1 to 3, characterized in that the operator element (16) is guided in a radially inwardly located sealing structure (13) of the stator of the second turbine (11) in an axial direction or in the flow direction, whereby the operator element (16) is fixed in the axial direction by a shearable pin (18).

5. The arrangement of one or more of the claims 1 to 4, characterized in that the sensor element (21) is guided in a radial direction in the stator of the second turbine (11), and is withdrawable out of the stator of the second turbine (11) in the radial direction.

6. The arrangement of claim 5, characterized in that the sensor element (21) is guided in a first guide vane ring of the second turbine (11) as seen in the flow direction.

7. The arrangement of one or more of the claims 1 to 6, characterized in that the sensor element (21) cooperates, at a radially inwardly positioned end, with the operator element (16) in such a way that, in response to a shaft break, the operator element (16) is moved onto the sensor element (21) and hits the same while the pin (18) is sheared off, whereby the sensor element (21) generates thereof an electrical signal that represents a shaft break.

8. The arrangement of one or more of the claims 1 to 7, characterized in that the sensor element (21) is constructed as an impact sensor the structure of which is changed by an impact of the operator element (16) onto the same.

9. A gas turbine, particularly an aircraft engine, with at least two compressors, at least one combustion chamber, and at least two turbines, and with an arrangement for detecting a shaft break in a rotor of a first turbine (10), particularly a medium pressure turbine, whereby a second turbine (11), particularly a low pressure turbine, is positioned downstream of the first turbine, characterized in that an operator element (16) is positioned between the rotor of the first turbine (10) and a stator of the second turbine (11) radially inwardly relative to a flow channel, and in that a sensor element (21) is guided in the stator of the second turbine (11) in order to convert a shaft break detected by the radially inwardly positioned operator element (16) into an electrical signal and to transmit this electrical signal to a switching element which is positioned radially outwardly relative to the flow channel on a housing of the gas turbine.

10. The gas turbine of claim 9, characterized in that the operator element (16) is positioned between a last rotor blade ring of the first turbine (10), as seen in the flow

direction, and a first guide vane ring of the second turbine (11), as seen in the flow direction.

11. The gas turbine of claim 10, characterized in that the operator element (16) is positioned radially inwardly and neighboring to a rotor disk (12) of the last rotor blade ring, as seen in the flow direction, of the first turbine (10).

12. The gas turbine of one or more of claims 9 to 11, characterized in that the operator element (16) is guided in a radially inwardly located sealing structure (13) of the stator of the second turbine (11) in an axial direction or in the flow direction, whereby the operator element (16) is fixed in the axial direction by a shearable pin (18).

13. The gas turbine of one or more of claims 9 to 12, characterized in that the sensor element (21) is guided in a radial direction in the stator of the second turbine (10), and is withdrawable out of the stator of the second turbine (10) in the radial direction.

14. The gas turbine of claim 13, characterized in that the sensor element (21) is guided in a first guide vane ring of the second turbine (11) as seen in the flow direction.

15. The gas turbine of one or more of claims 9 to 14, characterized in that the sensor element (21) cooperates,

at a radially inwardly positioned end, with the operator element (16) in such a way that, in response to a shaft break, the operator element (16) is moved onto the sensor element (21) and hits the same while the pin (18) is sheared off, whereby the sensor element (21) generates thereof an electrical signal that represents a shaft break.

16. The gas turbine of one or more of claims 9 to 15, characterized in that the sensor element (21) is constructed as an impact sensor the structure of which is changed by an impact of the operator element (16) onto the same.